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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/824,050	04/03/2001	Akio Ito	109135	9278

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OLIFF & BERRIDGE, PLC
P.O. BOX 19928
ALEXANDRIA, VA 22320

EXAMINER

SHOSHO, CALLIE E

ART UNIT	PAPER NUMBER
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1714

DATE MAILED: 07/03/2002

6

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/824,050

Applicant(s)

ITO ET AL.

Examiner

Callie E. Shosho

Art Unit

1714

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 April 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3,5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by GB 2318356 taken in view of the evidence given in Imura et al. (U.S. 5,556,931) and Yumoto et al. (U.S. 5,800,907).

GB 2318356 discloses ink comprising colorant, monofunctional monomer such as glycidyl methacrylate and phenoxyethyl acrylate and difunctional monomer such as hexanediol di(meth)acrylate. It is disclosed that the monofunctional monomer is used either alone or in combination with the difunctional monomer. Further, it is disclosed that the monomers have viscosity less than 25 cP (page 1, lines 4-6, page 3, lines 22-26, page 4, lines 21-25, page 5, lines 6-7 and 28-31, and page 8, line 32-page 9, line 6).

It is well known, as evidenced by col.27, line 25 of Yumoto et al., that hexanediol dimethacrylate has viscosity of 5-8 cP (i.e. mPa s) while col.11, line 17 of Imura et al. disclose that glycidyl methacrylate has viscosity of 2 cP.

When using combination of monofunctional monomer and difunctional monomer, such as glycidyl methacrylate and hexanediol dimethacrylate for instance, it is calculated, using the formula in present claim 2, that the viscosity is approximately 3.8-5.7 cP.

In light of the above, it is clear that GB 2318356 anticipates the present claims.

3. Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by EP 465039 taken in view of the evidence given in Yumoto et al. (U.S. 5,800,907).

EP 465039 discloses ink comprising colorant, monofunctional monomer such as decyl acrylate and hydroxyethyl methacrylate and difunctional monomer such as hexanediol di(meth)acrylate. Further, it is disclosed that the ink has viscosity less than 10 cP (col.2, lines 2-3 and 14-17, col.2, line 57-col.3, line 7, col.3, lines 12-15 and 28-38, col.4, lines 7-10, col.5, line 27, and col.7, lines 8-10). It is well known, as evidenced by col.27, lines 25 and 27-28 of Yumoto et al., that hexanediol dimethacrylate has viscosity of 5-8 cP (i.e. mPa s) while hydroxyethyl methacrylate has viscosity of 4-5 cP.

When using combination of monofunctional monomer and difunctional monomer, such as hydroxyethyl methacrylate and hexanediol dimethacrylate for instance, it is calculated, using the formula in present claim 2, that the average viscosity is approximately 4.5-6.9 cP.

Although there is no explicit disclosure of monofunctional monomer having viscosity of 1-3 cP, given that EP 465039 disclose use of monofunctional monomer identical to those used in present invention such as decyl acrylate, it is clear that monofunctional monomer inherently possesses viscosity as presently claimed.

In light of the above, it is clear that EP 465039 anticipates the present claims.

4. Claims 1-2 and 4-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Laufer et al. (U.S. 4,264,483).

Laufer et al. disclose ink comprising colorant and single monomer or mixture of monomers wherein the monomers include butanediol dimethacrylate that has viscosity of 5 cP and hydroxyethyl acrylate, which has viscosity of 7.5 cP (col.1, lines 8-9, col.2, lines 1-2, col.5, line 54, and Table 1, col.11).

When using combination of monofunctional monomer and difunctional monomer, such as hydroxyethyl methacrylate and butanediol dimethacrylate for instance, it is calculated, using the formula in present claim 2, that the average viscosity is approximately 5.8 cP.

In light of the above, it is clear that Laufer et al. anticipates the present claims.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.

3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 7-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 465039 in view of Asai et al. (U.S. 5,446,082) and Yumoto et al. (U.S. 5,800,907).

EP 465039 disclose printed product comprising image formed on substrate wherein the image is made with ink comprising colorant, monofunctional monomer such as decyl acrylate and hydroxyethyl methacrylate and difunctional monomer such as hexanediol di(meth)acrylate (col.2, lines 2-3 and 14-17, col.2, line 57-col.3, line 7, col.3, lines 12-15 and 28-38, col.4, lines 7-10, col.5, line 27, and col.7, lines 8-10). It is well known, as evidenced by col.27, lines 25 and 27-28 of Yumoto et al., that hexanediol dimethacrylate has viscosity of 5-8 cP (i.e. mPa s) while hydroxyethyl methacrylate has viscosity of 4-5 cP.

When using combination of monofunctional monomer and difunctional monomer, such as hydroxyethyl methacrylate and hexanediol dimethacrylate for instance, it is calculated, using the formula in present claim 2, that the average viscosity is approximately 4.5-6.9 cP.

Although there is no explicit disclosure of monofunctional monomer having viscosity of 1-3 cP, given that EP 465039 disclose use of monofunctional monomer identical to those used in present invention such as decyl acrylate, it is clear that monofunctional monomer inherently possesses viscosity as presently claimed.

The difference between EP 465039 and the present claimed invention is the requirement in the claims that the image is formed on ink-receiving layer of substrate.

EP 465039 discloses forming image on substrate but there is no explicit disclosure that the substrate comprises ink-receiving layer.

Asai et al. disclose ink jet recording medium comprising image or ink receiving layer comprising polyester that has glass transition temperature of 40-70 °C. The motivation for using such recording medium is to obtain high quality images superior in color density, color reproducibility, and sharpness (col.1, lines 25-31 and col.3, lines 49-55).

In light of the motivation for using recording medium with ink-receiving layer disclosed by Asai et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to form image in EP 465039 on substrate which comprises such ink-receiving layer in order to high quality images superior in color density, color reproducibility, and sharpness, and thereby arrive at the claimed invention.

8. Claims 7-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over GB 2318356 in view of Asai et al. (U.S. 5,446,082), Imura et al. (U.S. 5,556,931) and Yumoto et al. (U.S. 5,800,907).

GB 2318356 disclose printed product comprising image formed on substrate wherein the image is made with ink comprising colorant, monofunctional monomer such as glycidyl methacrylate and phenoxyethyl acrylate and difunctional monomer such as hexanediol di(meth)acrylate. It is disclosed that the monofunctional monomer is used either alone or in combination with the difunctional monomer (page 1, lines 4-6, page 3, lines 22-26, page 4, lines 21-25, page 5, lines 6-7 and 28-31, and page 8, line 32-page 9, line 6).

It is well known, as evidenced by col.27, line 25 of Yumoto et al., that hexanediol dimethacrylate has viscosity of 5-8 cP (i.e. mPa s) while col.11, line 17 of Imura et al. disclose that glycidyl methacrylate has viscosity of 2 cP.

When using combination of monofunctional monomer and difunctional monomer, such as glycidyl methacrylate and hexanediol dimethacrylate for instance, it is calculated, using the formula in present claim 2, that the average viscosity is approximately 3.8-5.7 cP.

The difference between GB 2318356 and the present claimed invention is the requirement in the claims that the image is formed on ink-receiving layer of substrate.

GB 2318356 discloses forming image on substrate but there is no explicit disclosure that the substrate comprises ink-receiving layer.

Asai et al. disclose ink jet recording medium comprising image or ink receiving layer comprising polyester that has glass transition temperature of 40-70 °C. The motivation for using such recording medium is to obtain high quality images superior in color density, color reproducibility, and sharpness (col.1, lines 25-31 and col.3, lines 49-55).

In light of the motivation for using recoding medium with ink-receiving layer disclosed by Asai et al. as described above, it therefore would have been obvious to one of ordinary skill in

the art to form image in GB 2318356 on substrate which comprises such ink-receiving layer in order to high quality images superior in color density, color reproducibility, and sharpness, and thereby arrive at the claimed invention.

9. Claims 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 465039 in view of Ito et al. (U.S. 5,912,085) and Yumoto et al. (U.S. 5,800,907).

EP 465039 disclose printed product comprising image formed on substrate wherein the image is made with ink comprising colorant, monofunctional monomer such as decyl acrylate and hydroxyethyl methacrylate and difunctional monomer such as hexanediol dimethacrylate (col.2, lines 2-3 and 14-17, col.2, line 57-col.3, line 7, col.3, lines 12-15 and 28-38, col.4, lines 7-10, col.5, line 27, and col.7, lines 8-10). It is well known, as evidenced by col.27, lines 25 and 27-28 of Yumoto et al., that hexanediol dimethacrylate has viscosity of 5-8 cP (i.e. mPa s) while hydroxyethyl methacrylate has viscosity of 4-5 cP.

When using combination of monofunctional monomer and difunctional monomer, such as hydroxyethyl methacrylate and hexanediol dimethacrylate for instance, it is calculated, using the formula in present claim 2, that the average viscosity is approximately 4.5-6.9 cP.

Although there is no explicit disclosure of monofunctional monomer having viscosity of 1-3 cP, given that EP 465039 disclose use of monofunctional monomer identical to those used in present invention such as decyl acrylate, it is clear that monofunctional monomer inherently possesses viscosity as presently claimed.

The difference between EP 465039 and the present claimed invention is the requirement in the claims that the image is formed on ink-receiving layer of substrate.

EP 465039 discloses forming image on substrate but there is no explicit disclosure that the substrate comprises ink-receiving layer.

Ito et al. disclose ink jet recording material comprising ink receiving layer comprising polyester or styrene-acrylic copolymer. The motivation for using such recording medium is that it is superior in waterfastness with high gloss on the surface and is capable of producing high quality and high grade prints (col.1, lines 42-47, col.2, lines 49-53, col.5, lines 66-67, and col.6, lines 3 and 7),

In light of the motivation for using recording medium with ink-receiving layer disclosed by Ito et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to form image in EP 465039 on substrate which comprises such ink-receiving layer in order to produce high quality and high grade prints, and thereby arrive at the claimed invention.

10. Claims 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 465039 in view of Ito et al. and Yumoto et al. as applied to claims 7-11 above, and further in view of Asai et al. (U.S. 5,446,082).

The difference between EP 465039 in view of Ito et al. and Yumoto et al. and the present claimed invention is the requirement in the claims of glass transition temperature of the polyester present in ink-receiving layer.

Asai et al., which is drawn to ink jet recording medium, disclose use of polyester in ink-receiving layer wherein the polyester has glass transition temperature of 40-70 °C in order to produce images with good heat resistance and blocking resistance (col.3, lines 49-55).

In light of the motivation for using polyester with specific glass transition temperature disclosed by Asai et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such polyester in EP 465039 in order to produce printed product with good heat resistance and blocking resistance, and thereby arrive at the claimed invention.

11. Claims 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over GB 2318356 in view of Ito et al. (U.S. 5,912,085), Imura et al. (U.S. 5,556,931), and Yumoto et al. (U.S. 5,800,907).

GB 2318356 disclose printed product comprising image formed on substrate wherein the image is made with ink comprising colorant, monofunctional monomer such as glycidyl methacrylate and phenoxyethyl acrylate and difunctional monomer such as hexanediol diacrylates. It is disclosed that the monofunctional monomer is used either alone or in combination with the difunctional monomer (page 1, lines 4-6, page 3, lines 22-26, page 4, lines 21-25, page 5, lines 6-7 and 28-31, and page 8, line 32-page 9, line 6).

It is well known, as evidenced by col.27, line 25 of Yumoto et al., that hexanediol dimethacrylate has viscosity of 5-8 cP (i.e. mPa s) while col.11, line 17 of Imura et al. disclose that glycidyl methacrylate has viscosity of 2 cP.

When using combination of monofunctional monomer and difunctional monomer, such as glycidyl methacrylate and hexanediol dimethacrylate for instance, it is calculated, using the formula in present claim 2, that the average viscosity is approximately 3.8-5.7 cP.

The difference between GB 2318356 and the present claimed invention is the requirement in the claims that the image is formed on ink-receiving layer of substrate.

GB 2318356 discloses forming image on substrate but there is no explicit disclosure that the substrate comprises ink-receiving layer.

Ito et al. disclose ink jet recording material comprising ink receiving layer comprising polyester or styrene-acrylic copolymer. The motivation for using such recording medium is that it is superior in waterfastness with high gloss on the surface and is capable of producing high quality and high grade prints (col.1, lines 42-47, col.2, lines 49-53, col.5, lines 66-67, and col.6, lines 3 and 7),

In light of the motivation for using recoding medium with ink-receiving layer disclosed by Ito et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to form image in GB 2318356 on substrate which comprises such ink-receiving layer in order to produce high quality and high grade prints, and thereby arrive at the claimed invention.

12. Claims 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over GB 2318356 in view of Ito et al., Imura et al., and Yumoto et al. as applied to claims 7-11 above, and further in view of Asai et al. (U.S. 5,446,082).

The difference between GB 2318356 in view of Ito et al., Imura et al., and Yumoto et al. and the present claimed invention is the requirement in the claims of glass transition temperature of the polyester present in ink-receiving layer.

Asai et al., which is drawn to ink jet recording medium, disclose use of polyester in ink-receiving layer wherein the polyester has glass transition temperature of 40-70 °C in order to produce images with good heat resistance and blocking resistance (col.3, lines 49-55).

In light of the motivation for using polyester with specific glass transition temperature disclosed by Asai et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such polyester in GB 2318356 in order to produce printed product with good heat resistance and blocking resistance, and thereby arrive at the claimed invention.

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Fujimoto et al. (U.S. 4,379,039) disclose UV curable composition comprising monofunctional monomer and multifunctional monomer but the viscosity is much greater than presently claimed.

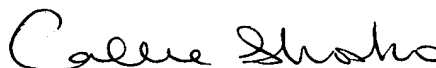
Mukoyoshi et al. (U.S. 4,997,807) disclose image receiving sheet for thermal transfer printing wherein the image receiving layer comprises monofunctional monomer and multifunctional monomer.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 703-305-0208. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 703-306-2777. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Art Unit: 1714

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



Callie E. Shosho

Examiner

Art Unit 1714

CS

7/1/02